

Claims

1. A process of dewatering an aqueous suspension employing a flocculating system comprising treating the suspension with a flocculating amount of a first flocculant and a dewatering amount of a second flocculant, and  
5     subjecting the suspension to mechanical dewatering to form a cake, wherein the first flocculant brings about flocculation and assists thickening of the suspension and the second flocculant further dewateres the suspension, characterised in that the second flocculant is a water-soluble or water swellable polymer that is mixed into the suspension in the form of an aqueous  
10     composition comprising dissolved or hydrated polymer having a Brookfield viscosity of above 30,000 cps (measured at 20°C, RVT viscometer, spindle 6, 1rpm).
2. A process according to claim 1 in which the aqueous suspension is sewage sludge.
- 15     3. A process according to claim 1 or claim 2 in which the mechanical dewatering employs an apparatus selected from the group consisting of belt press, filter press, screw press and centrifuge.
4. A process according to any of claims 1 to 3 in which the second flocculant has a polymer concentration above 2% by weight, preferably between  
20     5 and 20%.
5. A process according to any of claims 1 to 4 in which the second flocculant has a Brookfield viscosity of between 100,000 and 800,000 cps (measured at 20°C, RVT viscometer, spindle 6, 1rpm).
6. A process according to any of claims 1 to 5 in which the second  
25     flocculant is cationic.
7. A process according to any of claims 1 to 6 in which the second flocculant and is formed from at least 30 % by weight cationic monomer or monomers.
8. A process according to any of claims 1 to 7 in which the second  
30     flocculant is selected from the group consisting of cationic polyacrylamides, polymers of dialkyl diallyl ammonium chloride, dialkyl amino alkyl (meth) -

acrylates (or salts thereof) and dialkyl amino alkyl (meth)-acrylamides (or salts thereof).

9. A process according to any of claims 1 to 8 in which the second flocculant has an intrinsic viscosity of at least 0.5 dl/g, preferably 4 to 10 dl/g.

5 10. A process according to any of claims 1 to 9 in which the second flocculant is selected from the group consisting of,

i) a polymer formed from 50 to 100% by weight methyl chloride quaternary ammonium salt of dimethyl amino ethyl (meth) acrylate and 0 to 20% by weight acrylamide of intrinsic viscosity between 4 and 10 dl/g,

10 ii) polyvinyl amidine and polyvinyl amines of intrinsic viscosity greater than 1 dl/g,

iii) quaternised salts of Mannich addition polyacrylamides of intrinsic viscosity greater than 1 dl/g, and

15 iv) poly dimethyl diallyl ammonium chloride of intrinsic viscosity greater than 0.5 dl/g.

11. A process according to any of claims 1 to 10 in which the first flocculant is a cationic organic polymer.

12. A process according to claim 11 in which the polymer is selected from the group consisting of acrylamide polymers, polyvinyl amidine, polyvinyl amine, 20 poly dimethyl diallyl ammonium chloride, poly amines, polyethyleneimines, mannich polyacrylamides and quaternised mannich polyacrylamides.

13. A process according to any of claims 1 to 12 in which the first flocculant and second flocculant are added substantially simultaneously.

14. A process according to any of claims 1 to 13 in which the first flocculant 25 and second flocculant are combined into a single composition.

15. Use of an aqueous flocculant composition for dewatering an aqueous suspension,

wherein the composition comprises a water-soluble or water swellable polymer which is dissolved or hydrated,

30 characterised in that the aqueous composition has a Brookfield viscosity of above 30,000 cps (measured at 20°C, RVT viscometer, spindle 6, 1rpm).